



Appendix B : SURFACE WATER DRAINAGE ATTENUATION CALCULATIONS

DBFL Consulting Engineers

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Ormond House
Upper Ormond Quay
Dublin 7

220084 - Civic Offices
Active Travel Links
Source Control -Catchment 1A

Date 14/06/2023
File 220084 - Source Control...

Designed by KMM
Checked by JPC

InnovyzeSource Control 2020.1

Micro
Drainage

Summary of Results for 100 year Return Period (+20%)

Half Drain Time : 369 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	54.576	0.311	0.0	1.8	1.8	28.0	O K
30 min Summer	54.689	0.424	0.0	1.8	1.8	38.2	O K
60 min Summer	54.800	0.535	0.0	1.8	1.8	48.2	O K
120 min Summer	54.897	0.632	0.0	1.8	1.8	56.9	O K
180 min Summer	54.938	0.673	0.0	1.8	1.8	60.5	O K
240 min Summer	54.955	0.690	0.0	1.8	1.8	62.1	O K
360 min Summer	54.956	0.691	0.0	1.8	1.8	62.2	O K
480 min Summer	54.951	0.686	0.0	1.8	1.8	61.8	O K
600 min Summer	54.945	0.680	0.0	1.8	1.8	61.2	O K
720 min Summer	54.938	0.673	0.0	1.8	1.8	60.6	O K
960 min Summer	54.921	0.656	0.0	1.8	1.8	59.1	O K
1440 min Summer	54.878	0.613	0.0	1.8	1.8	55.1	O K
2160 min Summer	54.800	0.535	0.0	1.8	1.8	48.2	O K
2880 min Summer	54.701	0.436	0.0	1.8	1.8	39.2	O K
4320 min Summer	54.532	0.267	0.0	1.8	1.8	24.1	O K
5760 min Summer	54.421	0.156	0.0	1.8	1.8	14.1	O K
7200 min Summer	54.352	0.087	0.0	1.7	1.7	7.8	O K
8640 min Summer	54.308	0.043	0.0	1.6	1.6	3.9	O K
10080 min Summer	54.281	0.016	0.0	1.6	1.6	1.5	O K
15 min Winter	54.616	0.351	0.0	1.8	1.8	31.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	83.784	0.0	29.8	18
30 min Summer	58.213	0.0	41.4	33
60 min Summer	38.020	0.0	54.0	62
120 min Summer	24.094	0.0	68.7	122
180 min Summer	18.291	0.0	78.1	182
240 min Summer	15.014	0.0	85.6	240
360 min Summer	11.333	0.0	96.9	324
480 min Summer	9.271	0.0	105.7	386
600 min Summer	7.928	0.0	112.9	452
720 min Summer	6.975	0.0	119.2	520
960 min Summer	5.696	0.0	129.9	658
1440 min Summer	4.280	0.0	146.4	938
2160 min Summer	3.214	0.0	164.7	1360
2880 min Summer	2.621	0.0	179.1	1756
4320 min Summer	1.963	0.0	201.3	2460
5760 min Summer	1.597	0.0	218.4	3120
7200 min Summer	1.361	0.0	232.7	3816
8640 min Summer	1.194	0.0	245.0	4496
10080 min Summer	1.069	0.0	255.8	5144
15 min Winter	83.784	0.0	33.4	18

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Innovyze	Source Control 2020.1	

Model Details

Storage is Online Cover Level (m) 56.950

Cellular Storage Structure

Invert Level (m) 54.265 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	90.0	0.0	1.001	0.0	0.0
1.000	90.0	0.0			

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0065-2000-1173-2000
Design Head (m) 1.173
Design Flow (l/s) 2.0
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 65
Invert Level (m) 54.165
Minimum Outlet Pipe Diameter (mm) 100
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.173	2.0
Flush-Flo™	0.286	1.8
Kick-Flo®	0.576	1.4
Mean Flow over Head Range	-	1.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.5	1.200	2.0	3.000	3.1	7.000	4.6
0.200	1.7	1.400	2.2	3.500	3.3	7.500	4.7
0.300	1.8	1.600	2.3	4.000	3.5	8.000	4.9
0.400	1.7	1.800	2.4	4.500	3.7	8.500	5.0
0.500	1.6	2.000	2.5	5.000	3.9	9.000	5.1
0.600	1.5	2.200	2.7	5.500	4.1	9.500	5.3
0.800	1.7	2.400	2.8	6.000	4.2		
1.000	1.9	2.600	2.9	6.500	4.4		

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